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which still can be used)

HAZARDOUS MATERIALS: A CITIZEN'S ORIENTATION

Federal Emergency Management Agency

U.S. Environmental Protection Agency

U.S. Department of Transportation

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Grateful acknowledgement is given to the Genium Publishing Corporation of Schenectady, New York for providing the sample Material Safety Data Sheet (MSDS) that appears in Unit 3, and to Environmental Health Watch, whose "Citizen Fact Sheets" provided the basis for two tables included in Unit 5.

FOREWORD

COURSE SPONSORS

Three Federal agencies have contributed to the development of this home study course: the Federal Emergency Management Agency (FEMA), the Environmental Protection Agency (EPA), and the Department of Transportation (DOT). All three agencies have responsibilities related to the protection of the public from hazards posed by the manufacture, transport, and disposal of hazardous materials.

The Department of Transportation is charged with the development and oversight of the Nation's transportation policy, including the regulation of interstate hazardous materials transportation. The Environmental Protection Agency is the primary agency responsible for protecting our environment, including funding cleanup operations at thousands of abandoned hazardous waste disposal sites and oversight of programs to regulate disposal of hazardous wastes identified by certain legislation. The Federal Emergency Management Agency is the central point of contact within the Federal government for a wide range of emergency management activities in both peace and war. That responsibility includes the design, delivery, coordination, and monitoring of hazardous materials training in cooperation with the members of the National Response Team (NRT).

FEMA's training program is managed by its Office of Training, which includes two schools: The National Fire Academy (NFA) and the Emergency Management Institute (EMI). Both the National Fire Academy and the Emergency Management Institute offer courses, workshops, and seminars on the campus at Emmitsburg, Maryland and nationwide through the Emergency Management Training program and State fire service training programs. Although most training activities are directed at State and local government officials with emergency management or fire protection responsibilities, some are also provided to private sector audiences as well as to the general public, whose support is necessary for an effective, comprehensive emergency management program. The National Fire Academy and the Emergency Management Institute actively support each other's training activities. While the Emergency Management Institute had the primary role for coordinating the development of this course, the National Fire Academy provided support through technical assistance.

Home Study Courses

The home study program is one of the delivery channels the Emergency Management Institute uses to deploy emergency management training to the general public and to selected emergency management audiences, The Emergency Management Institute's home study program currently consists of five courses:

- Emergency Program Manager (HS-1)
- Emergency Management USA (HS-2)
- Radiological Emergency Management (HS-3)
- Preparedness Planning for a Nuclear Crisis (HS-4)

This course, "Hazardous Materials: A Citizen's Orientation," is the fifth in the series. These home study courses are geared toward both the general public and persons who have local government responsibilities for emergency management. All courses are suitable for either individual or group enrollment, and are available at no charge. Courses include a final examination, and persons who score 75% or better on the examination are issued a certificate of completion by EM 1.

For information about these courses, contact your local or State Office of Emergency Management or write to:

FEMA Home Study Program
Administration Office
Emergency Management Institute
16825 S. Seton Avenue
Emmitsburg, MD 21727

In addition to the courses available through the Emergency Management Institute's home study program, the National Fire Academy offers a home study course entitled, "Wildland/Urban Interface Fire Protection." The course is designed to provide individuals with the skills needed to assess local wildland/urban interface fire problems, recognize proven protection strategies, and put solutions to work protecting community and wildlands. This course may be purchased through the National AudioVisual Center, 8700 Edgeworth Drive, Capitol Heights, MD 20743-3701, (301) 763-1896.

INTRODUCTION

As hazardous materials and hazardous wastes become more and more commonplace, accumulating in our earth, air, and water, it is vitally important that citizens are well-informed about the challenges posed by these substances. American communities are facing policy decisions that can dramatically affect their population's well-being: Should hazardous materials traffic be regulated? What is the community's role in preparing for the possibility of a serious hazardous materials accident? What should be done with household hazardous wastes? Concerned community members willing to take the time to learn more about such issues can help protect their own health and contribute to their community—forjust as surely as there are thorny problems associated with hazardous materials, there are creative minds at work seeking and testing solutions.

This home study course is intended to provide interested members of the general public with a general introduction to hazardous materials that can serve as a foundation for more specific research. No prior knowledge of the subject is assumed. At the end of the course, the reader should be able to:

- Recognize the dangers posed by hazardous materials
- List places where hazardous materials are likely to be encountered
- Identify when a hazard may exist
- Contact the appropriate persons or agencies to give or receive specific hazardous materials information
- Identify procedures to minimize personal and community exposure to hazardous materials.

The course has five units:

Unit 1: Hazardous Materials and Human Health introduces many of the basic terms used to discuss hazardous materials problems, and explains how hazardous materials enter and move through the body and the environment.

Unit 2: Hazardous Materials Regulation explains the roles of Federal, State, and local governments in reducing hazardous materials risks, and reviews the key provisions of critical Federal legislation.

Unit 3: Identifying Hazardous Materials provides an overview of locations in which these materials are commonly found and discusses ways of determining what particular chemicals, with what health effects, exist in these locations.

Unit 4: Preparing for Hazardous Materials Incidents shows what local communities can do to increase their preparedness to respond to hazardous materials accidents of any size. It also identifies steps individuals can take to protect themselves in an incident.

Unit 5: Hazardous Materials in the Home presents the hazards associated with common household hazardous materials and reviews procedures for handling and discarding such materials safely at both the household and community level.

How to Complete the Course

You will remember the material best if you do not rush through it. Often there is white space next to the text where you can make notes. (The more you ***interact*** with the material, the better you will remember it!) Take a break at the end of each unit and give yourself time to think about the material. Then, go back and take the quiz at the end of the unit, reviewing the relevant material if you missed any questions.

The course contains a pretest, five units, a glossary, a resource section to help you continue learning, and a final examination. You should take the ***pretest*** to test your knowledge ***before*** you begin the course. You can score the pretest yourself, using the pretest answer key, to determine how much you know before you begin studying the course.

The ***glossary,*** located after the final unit, contains definitions of terms related to hazardous materials. The glossary may be consulted while you are reading the units, or may be read separately.

A ***resource section*** is included to help you continue learning after you have completed the course. This section features listings of organizations that can supply additional information relevant to course objectives, recommended reading, computer networks accessible to the public, and telephone services that supply information on specific hazardous materials issues.

The ***final examination,*** located at **the end** of the course booklet, will test the knowledge you have gained from the course. An answer sheet is supplied with the course materials. Mail the completed answer sheet to the address on the form; your test will be evaluated and results will be mailed to you within a few weeks. If your score is 75% or above, a certificate of completion will be mailed to you. Interested students successfully completing the course may apply for one semester hour of college credit through the FEMA Home Study Program Office.

How to Take the Pretest

The following pretest is designed to evaluate your current knowledge of hazardous materials. Read each question carefully, and select the one answer that best applies. Circle the letter corresponding to the answer you have chosen. Complete all the questions ***without*** looking ahead to the course materials, as your pretest score will be a useful measure only if the questions are answered before you begin the course.

When you have completed the pretest, check your answers against the answer key provided. As you begin each unit, watch for discussions of the questions you missed.

The pretest should take you approximately 15 minutes to complete. Find a quiet spot where you will not be interrupted, and begin. When you have finished, and all of your answers have been checked against the key, begin reading Unit 1.

PRETEST

(answers on page A-4)

1. The medium through which a chemical reaches us (air, surface water, groundwater, or soil) is irrelevant in determining the risk it poses to our health.

   a. True b. False

2. Which of the following is a means by which you can become contaminated?

   a. Touching a contaminated object
   b. Eating contaminated food
   c. Breathing contaminated air
   d. All of the above

3. Teratogens, carcinogens, and mutagens are all substances that produce this type of effect:

   a. Irritation of the stomach
   b. Tumors
   c. Acute symptoms, such as coughing
   d. Changes in the genetic code (DNA)

4. Asphyxiants are chemicals that:

   a. Inflame living tissue
   b. Deaden the nervous system
   c. Starve cells of oxygen
   d. Affect specific organ systems

5. Exposure to a toxic chemical over a long period is called _____ exposure.

   a. Acute c. Lethal e. Chronic
   b. Toxic d. Marginal

6. Title Ill of the 1986 Superfund law provides for citizen rights relating to:

   a. Community right-to-know information processes
   b. Pre-planning for chemical emergencies
   c. Worker training standards
   d. Both a and b
   e. None of the above

7. Under Superfund, the ***primary*** agency for planning, preparedness and related training for hazardous materials emergency management is:

   a. FEMA c. DOT e. USDA
   b. EPA d. OSHA

8. Under the Hazardous Materials Transportation Act, which agency is primarily responsible for standards and regulations relating to the ***interstate*** transport of hazardous materials?

   a. FEMA c. DOT e. EPA
   b. OSHA d. FBI

9. Which agency has primary regulatory responsibility for standards and rules relating to workplace safety?

   a. FEMA
   b. OSHA
   c. DOT
   d. FBI
   e. EPA

10. Title III of the new Superfund law requires, ***for the first time***, that stated quantities of certain commonly used and widely distributed chemicals of which industry be reported to designated government agencies?

    a. Manufacturing
    b. Construction
    c. Agricultural
    d. Mining
    e. Retail merchandising

11. The most commonly transported class of hazardous materials in the United States is:

    a. Acids and caustics
    b. Etiological agents
    c. Nuclear fuels
    d. Compressed gases
    e. Flammable and combustible liquids

12. The measure of a chemical's risk to living tissue is usually related to a recommended standard expressed in:

    a. Liters (l.)
    b. Ounces (oz.)
    c. Square inches (sq. in.)
    d. Cubic centimeters (cc)
    e. Parts per million (ppm)

13. The U.S. Department of Transportation (DOT) applies its definition of "any substance that poses an unreasonable risk to public safety and health" when transported to:

    a. Hazardous materials
    b. Hazardous waste
    c. Chemical substitutes
    d. Elementary particles

14. The ***least*** dependable and most potentially dangerous method to use for identifying the presence of hazardous materials is:

    a. Container shape and size
    b. Labelling and marking
    c. Sense of smell or taste
    d. Discoloration of materials

15. The United Nations (U. N.) placarding and labelling system is designed for and used in marking the presence and nature of hazardous materials in:

    a. Fixed-site locations
    b. Transportation modes
    c. Both
    d. Neither

16. The on-scene Incident Commander at a hazardous materials incident in ***most*** States and jurisdictions is likely to be from:

    a. The local public works department
    b. The local fire service
    c. The local law enforcement department
    d. The State medical examiner
    e. EMS or EMT personnel

17. One thing an untrained and unauthorized citizen should ***not*** do at the scene of a hazardous materials incident is:

    a. Observe all posted exclusion zones
    b. In absence of any clear direction, move to a location that is uphill and upwind of the suspected risk area
    c. Attempt to help authorities by approaching the on-scene command post with information
    d. Avoid the path of incoming equipment
    e. Listen for public announcements on radio and TV

18. In a hazardous materials incident, as in any emergency or disaster situation, the outcome is dependent primarily on the efforts of which level of government?

    a. Local
    b. State
    c. Federal
    d. International

19. Hazardous materials releases can involve materials which often are odorless, colorless, and tasteless, as well as gases that are heavier than air. Therefore, a citizen who is not qualified to personally determine the presence of hazardous materials threats should:

    a. Act according to personal perception
    b. Rely on home testing units
    c. Increase air circulation in the home
    d. Act according to official advisories
    e. Use a home gas mask protection unit

20. A hazardous materials Incident Commander has great problems with on-scene civilian personnel who "volunteer" their help and assistance, because such volunteers usually do not have appropriate training and safety awareness.

    a. True
    b. False

21. Which of the chemicals listed below can cause brain damage (among other effects) if ingested in large quantities? This chemical is found in some older residential piping systems, and can contaminate drinking water.

    a. Asbestos
    b. Formaldehyde
    c. Lead
    d. Radon

22. Inhaling organic solvents in sufficient quantity can cause nausea, headaches, muscular weakness, and impaired motor response (among other effects). Three of the following are organic solvents. Which one is a non-organic solvent?

    a. Paint thinner
    b. Spot remover
    c. Drain opener
    d. Floor polish

23. Which of the following is a good way to dispose of a significant quantity of a common household hazardous material?

    a. Give it to someone who can use it up properly
    b. Flush it down the toilet
    c. Put it in the garbage
    d. Pour it in your septic tank

24. Product package labels for hazardous materials in shipment utilize three words that express the level of threat posed by that material. Arranged from the ***most*** to ***least*** serious threat, these labels are:

    a. Warning, Danger, Caution
    b. Warning, Caution, Danger
    c. Danger, Caution, Warning
    d. Danger, Warning, Caution
    e. Caution, Warning, Danger

25. If you are in a position to assist someone who has just splashed a toxic chemical in an eye, the ***first*** thing you should do is:

    a. Begin flushing the eye with water
    b. Call the Poison Control Center
    c. Call a neighbor to ask for advice
    d. Take the person to the hospital